

ally still smaller quantities of free Hydrogen. The appearance of the Light Car-buretted Hydrogen in so liberal quantities at the Iola well, as also the composition of the water brought up by the pulsations of the gas itself, are both matters of very great scientific interest ; but neither their interest nor their importance are in any way augmented by ascribing miraculous properties to the one or an anomalous origin to the other.

THE INSECTS OF WALLACE COUNTY, KANSAS.

By Prof. F. H. SNOW, of the University of Kansas.

The Kansas University Scientific Expedition for 1877, in charge of the writer, spent three weeks in camp along the Smoky Hill river, about one mile from Fort Wallace. The elevation of this locality, above the level of the sea is about 3,700 feet. Wallace county is the extreme western county of the State, along the line of the Kansas Pacific Railway. The railway station is 420 miles, by rail, from Kansas City, and 219 miles from Denver. Our collecting ground was therefore very near the center of the plains, or of what was once known as the Great American Desert. The expedition for 1878 spent one month (June 12th to July 12th) in Gove and Wallace counties. Gove county adjoins Wallace county on the east, and the altitude of the railway station at Buffalo is about 3,300 feet above the level of the sea. As the two counties are contiguous, and as their faunal characteristics are apparently identical, the collections of both expeditions are combined in one list. Species taken in Wallace county alone, are marked "W."; those taken in Gove county, alone, are marked "G.", and those taken in both counties are not marked for locality. In the present paper, I include only the orders *Lepidoptera* and *Coleoptera*.

My assistants in 1877, were Messrs. Richard Foster and John M. Walker; in 1878, Richard Foster and Louis L. Dyche. To their indefatigable industry I am largely indebted for the valuable results of the expeditions. I am also indebted to the kindness of Dr. Jno. L. LeConte, of Philadelphia, for the determination of *Coleoptera* not previously known to me.

LIST OF LEPIDOPTERA :

- Pieris protodice* Bd.-Lec. G.
Nathalis Iole Bd. W.
Cotus Eurytheme Bd.
Danaus Archippus Fabr.
Argynnis Idalia Drury. G.
Euptoieta Claudia Cram. W.
Phyciodes Tharos Drury. W.
Phyciodes Nycteis Doubl. W.
Grapta interrogationis Fab. var. *umbrosa* Lintner
Vanessa Anthopa L. W.
Pyrameis Atalanta L.
Pyrameis cardui L.

Paphia glycerium Doubl. W.
Satyrus Alope Fabr. W.
Thecla humuli Harr.
Lycæna Melissa Edw.
Lycæna acmon West.-Hew. W.
Lycæna Alce Edw. G.
Pamphila Uncas Edw.
Pyrgus tessellata Scud.
Photisora Catullus Cram. G.
Deilephila lineata Fabr. W.
Proserpinus gauræ Sm.-Abb. W.
Egeria sp. Three undescribed species. W.
Cerura n. sp. W.
Agrotis Harveyi Grote. W.
Aletia argillacea Hübn. W.
Plusia gamma Linn. W.

Acopia perpallida n. sp. Grote. This species has been described by Prof. Grote in the "Canadian Entomologist" (Vol. X, p. 68), as follows :

"Larger than *carina*, with white secondaries. Primaries white, shaded with ochrey and with narrow fuscous lines. Basal line indicated ; anterior line upright, forming two large teeth ; outer line denticulate, outwardly produced opposite the cell ; orbicular obsolete, reniform concolorous, obscured by a dark shade. Sub-terminal shade line fuscous, even, continued to vein 7 from internal angle, above which it appears as an inwardly oblique shade from costa to vein 7. A terminal interrupted line ; fringes white. Hind wings white, very slightly soiled, with discal mark and in distinct line ; fringes white. Beneath yellowish white, shaded with fuscous on primaries ; fringes white. Body whitish. *Expanse* 28 mil.

"The median lines on primaries are further apart than in *carina*. This species was sent me by Prof. Snow under the number 504."

Alaria gauræ Sm. W.
Euleucyptera cumatilis Grote. W.
Lygranthacia jaguarina Guen. W.
Heliochilus paradoxus Grote. W.
Tarache luctipennis Harvey. W.
Drasteria erichteu Cramer.
Brotis vulneraria Hübn. W.
Catocala Nebraskæ Dodge. W.
Catocala amatris Hub. var. *nurus* Walk. W.
Catocala Ilia Cram. G.
Syneda Howlandi Grote. W.
Stegania pustularia Guen. W.
Hematopis grataria. Fab.
Conchylis Ridingsana Rob. W.

Number of species, 45.

LIST OF COLEOPTERA :

(The numbers are those of Crotch's check-list.)

CICINDELIDÆ.

1. *Amblychila cylindriciformis* Say.
14. *Cicindela pulchra* Say.
- 15d. *Cicindela scutellaris* Say.

22. *Cicindela purpurea* Oliv. var. *Audubonii* Lec.
 25. *Cicindela formosa* Say.
 —. *Cicindela venusta* Lec. W.
 27. *Cicindela fulgida* Say. W.
 43. *Cicindela cuprascens* Lec. G.
 46. *Cicindela sperata* Lec. G.
 51. *Cicindela punctulata* Fab.
 —. *Cicindela micans* Fab.
 60. *Cicindela circumpecta* Laf. W.

CARABIDÆ.

73. *Omophron tessellatum* Say. W.
 134. *Calosoma scrutator* Fab. G.
 141. *Calosoma obsoletum* Say.
 200. *Pasimachus elongatus* Lec.
 201. *Pasimachus punctulatus* Hald. W.
 318. *Galerita junus* Fab. W.
 329. *Casnonia Pennsylvanica* L. W.
 340. *Loxopeza grandis* Hentz.
 382. *Blechnus linearis* Lec. G.
 386. *Axinopalpus biplagiatus* Dej. G.
 393. *Glycia viridicollis* Lec. W.
 398. *Cymindis brevipennis* Zimm.
 461. *Platynus extensicollis* Say. W.
 463. *Platynus decorus* Say. W.
 498. *Platynus nutans* Say. G.
 561. *Evarthrus substratus* Lec.
 618. *Pterostichus scitulus* Lec. G.
 —. *Amara* sp. An undescribed species. W.
 694. *Amara impuncticollis* Say. W.
 699. *Amara fulvæ* Lec.
 703. *Amara convexa* Lec. W.
 709. *Amara obesa* Say. W.
 710. *Amara diffinis* Lec. W.
 795. *Chlænus tomentosus* Say.
 818. *Craticanthus dubius* Beauv.
 824. *Agonoderus comma* Fab. G.
 871. *Anisodactylus sericeus* Harr. G.
 916. *Selenophorus pedicularis* Dej.
 917. *Selenophorus troglodytes* Dej. G.
 928. *Harpalus caliginosus* Fab. W.
 933. *Harpalus compar* Lec. G.
 942. *Harpalus ventralis* Lec. W.
 976. *Stenolophus conjunctus* Say.
 1080. *Bembidium cordatum* Lec. G.
 1097. *Bembidium intermedium* Kby. G.

HALIPIDÆ.

1183. *Cnemidotus 12-punctatus* Say.

DYTISCIDÆ.

1185. *Eretes sticticus* Linn. G.

1208. *Hydroporus patruelis* Lec. G.
 1210. *Hydroporus nubilus* Lec. G.
 1236. *Hydroporus undulatus* Say. G.
 1279. *Laccophilus proximus* Say. G.
 1283. *Laccophilus 4-lineatus* Horn. G.
 1291. *Thermonectes ornaticollis* Aube. G.
 1338. *Coptotomus interrogatus* Fab. G.
 1347. *Gaurodytes disintegratus* Cr. G.

GYRINIDÆ

1389. *Dineutus assimilis* Aube.
 1402. *Gyrinus parvus* Say. G.

HYDROPHILIDÆ.

1423. *Helophorus lineatus* Say. G.
 1449. *Hydrophilus triangularis* Say. G.
 1450. *Tropisternus nimbatus* Say. G.
 1454. *Tropisternus sublaviois* Lec. G.
 1461. *Hydrocharis obtusatus* Say. G.
 1465. *Berosus miles* Lec. G.
 1477. *Berosus striatus* Say. G.
 1499. *Philhydrus perpleus* Lec.
 1504. *Philhydrus fimbriatus* Mels. G. Taken by S. W. Williston.
 1516. *Hydrobius subcupreus* Say. G.

STAPHYLINIDÆ.

1712. *Tachyporus chrysomelinus* Linn. G.
 1771. *Creophilus villosus* Grav.
 —. *Philonthus fusiformis* Fauvel MS. G.
 1884. *Cryptobium bicolor* Grav W.

SILPHIDÆ.

2175. *Silpha Carolina* Linn. W.
 2176. *Silpha marginata* Fab.
 2185. *Silpha tomentosa* Web. W.
 2188. *Peltis lapponica* Hb. W.
 2194. *Peltis truncata* Say. W.
 2196. *Peltis Americana* Linn. W.
 —. *Agathidium* sp. W.

DERMESTIDÆ.

2392. *Dermestes marmoratus* Say. G.
 2394. *Dermestes fasciatus* Lec. W.
 2395. *Dermestes nubilus* Say.
 —. *Attagenus* sp. G.

TRITOMIDÆ.

2474. *Typhaea fumata* Linn. G.

EROTYLIDÆ.

2506. *Languria Mozardi* Latr. W.
 2511. *Languria leta* Lec. G.
 2514. *Languria gracilis* Newm. G.

NITIDULIDÆ.

2725. *Carpophilus niger* Say. Taken by S. W. Williston.
 2755. *Nitidula ziczac* Say.

PHALACRIDÆ.

- . *Olibrus* sp. G.

COCCINELLIDÆ.

2830. *Hippodamia glacialis* Fab.
 2832. *Hippodamia convergens* Guer.
 2837. *Hippodamia parenthesis* Say.
 2847. *Coccinella 9-notata* Hb.
 2853. *Cycloneda sanguinea* Linn. G.
 2854a. *Cycloneda abdominalis* Say. G.
 2876. *Brachyacantha dentipes* Fab. G.
 2897. *Hyperaspidius trimaculata* Linn. G.
 2924. *Scymnus cervicalis* Muls. G.

HETEROCERIDÆ.

- . *Heterocerus* sp. G.

HISTERIDÆ.

3037. *Hister Harrisii* Kby.
 — . *Hister binotatus* Lec.
 3131. *Saprinus lugens* Er. W.
 3133. *Saprinus Pennsylvanicus* Payk.
 3158. *Saprinus fimbriatus* Lec.

SCARABÆIDÆ.

3223. *Canthon ebenus* Say.
 3230. *Canthon hudsonius* Forst. W.
 3241. *Phanæus carnifex* Linn. W.
 3244. *Onthophagus lutebrosus* Fab. W.
 3268. *Aphodius granarius* Linn. G.
 3283. *Aphodius stercorosus* Mels. W.
 3291. *Aphodius concavus* Say. G.
 — . *Atænius* sp. G.
 3351. *Bolboceras furetus* Fab. W.
 3352. *Bolboceras lazarus* Fab. W.
 3377. *Trox suberosus* Fab.
 3379. *Trox punctatus* Germ. W.
 3381. *Trox Sonoræ* Lec.
 3394. *Trox atrox* Lec. W.
 3482. *Diplotaxis pacata* Lec.
 3484. *Diplotaxis Haydenii* Lec. G.
 3518. *Lachnosterna crassissima* Blanch. G.
 3519. *Lachnosterna prunina* Lec. G.
 3520. *Lachnosterna rugosa* Mels. G.
 3545. *Lachnosterna glabricula* Lec. W.
 3564. *Tostegoptera lanceolata* Say.
 3566. *Polyphylla Hammondi* Lec. W.
 3588. *Strigoderma arboricola* Fabr. G.
 3609. *Ligyris gibbosus* De Geer.

3614. *Aphonus pyriformis* Lec. W.
 3645. *Euryomia Kernii* Hald. G.
 3646. *Euryomia inda* Linn. W.
 3650. *Euryomia fulgida* Fabr. G.
 3654. *Cremastochilus saucius*, Lec. W.
 3659. *Cremastochilus Knochii*, Lec.

BUPRESTIDÆ.

3692. *Dicerca obscura* Fab. W.
 3707. *Pocilonota cyanipes* Say. W.
 3791. *Acmæodera pulchella* Hbst. G.
 3827. *Agrilus pubiventris* Cr.
 3833. *Agrilus nuticus* Lec.

ELATERIDÆ.

3925. *Lacon rectangularis* Say.
 4050. *Drasterius dorsalis* Say. G.
 4090. *Monocrepidius auritus* Hbst. G.
 4154. *Melanotus verberans* Lec. G.
 —. *Melanotus* sp. G.
 4355. *Melanactes puncticollis* Lec.

LAMPYRIDÆ.

4448. *Lucidota punctata* Lec. G.

TELEPHORIDÆ.

4481. *Chauiognathus basalis* Lec.
 4526. *Telephorus flavipes* Lec. G.
 4561. *Ditemnus bidentatus* Say. W.

MALACHIDÆ.

4582. *Collops bipunctatus* Say. W.
 4584. *Collops 4-maculatus* Fab. var.
 4589. *Collops limbatus* Lec. G.

CLERIDÆ.

- . *Clerus* n. sp.
 4722. *Clerus Spinola* Lec. G.
 4734. *Clerus cordifer* Lec. W.
 4740. *Clerus thoracicus* Oliv. G.
 4765. *Hydnocera tabida* Lec. G.
 4791. *Corynetes rufipes* Fab.

CERAMBYCIDÆ.

4919. *Prionus imbricornis* Linn. G.
 4920. *Prionus fissicornis* Hald.
 5077. *Batyle ignicollis* Say. G.
 5081. *Batyle Pearsalli* Bland. G.
 5091. *Crossidius pulchellus* Lec. W.
 5094. *Crossidius discoideus* Say. W.
 5104. *Cyllene decorus* Oliv. var. *infaustus* Lec. G.
 5221. *Typocerus velutinus* Oliv.
 5224. *Typocerus sinuatus* Newm. A black variety of this species also occurs.

5306. *Monilema annulatum* Say.
 5404. *Ataxa crypta* Say. W.
 5424. *Mecas inornata* Say.
 5426. *Mecas gentilis* Lec. G.
 5433a. *Oberca basalis* Lec. G.
 5436. *Oberca oculaticollis* Say. G.
 5445. *Tetraopes tetraophthalmus* Forst. W.
 5447. *Tetraopes quinque maculatus* Hald.
 5448. *Tetraopes femoralis* Lec.

SPERMOPHYGIDÆ.

5472. *Bruchus discoideus* Say.
 5481. *Bruchus pruininus* Horn. Taken by S. W. Williston.
 5496. *Bruchus fraterculus* Horn.
 5506. *Bruchus seminulum* Horn. W.

CHRYSEMELIDÆ.

5550. *Lema collaris* Say. W.
 5554. *Lema trinivata* Oliv. var. G.
 5563. *Saxinis omogera* Lac. G.
 5569. *Coscinoptera axillaris* Cr.
 5571. *Coscinoptera dominicana* Fab. G.
 5595. *Cryptocephalus confluentis* Say. W.
 5631. *Pachybrachys vihinatus* Fab. G.
 5661. *Pachybrachys litiginosus* Suffr.
 5664. *Pachybrachys hepaticus* Mels. G.
 —. *Pachybrachys* sp. Two undescribed species.
 5687. *Myochrous squamosus* Lec. G.
 5693. *Chalcoparia globosa* Oliv. G.
 5694. *Paria 6-notata* Say. G.
 5714. *Colaspis favosa* Say. G.
 5715a. *Colaspis flavida* Say. W.
 —. *Colaspis flavida* Say, var. *lineata*. G.
 5716. *Colaspis pretexta* Say. G.
 5719. *Colaspis tristis* Oliv. var.
 5724. *Chrysomela 10-lineata* Say. G.
 5729. *Chrysomela exclamationis* Fab.
 5733. *Chrysomela disrupta* Rog. G.
 5741. *Chrysomela multipunctata* Say. W.
 5766. *Plagioderia lapponica* Linn. G.
 5772. *Plagioderia oviformis* Lec. G.
 5800. *Diabrotica trilineata* Say. W.
 5802. *Diabrotica 12-punctata* Oliv.
 5805. *Diabrotica blandula* Lec.
 5831. *Monoxia guttulata* Lec. G.
 5834b. *Trirhabda Canadensis* Kby. G.
 5838. *Trirhabda nitidicollis* Lec. W.
 5851. *Ediocybis vians* Ill. W.
 5865. *Disonycha alternata* Ill. W.
 5870. *Disonycha abbreviata* Mels.
 5873. *Disonycha triangularis* Say.

5882. *Graptodera torquata* Lec. Taken by S. W. Williston.
 5886. *Graptodera foliacea* Lec.
 5904. *Orchestris vittata* Fab. G.
 —. *Orchestris* sp. G.
 5912. *Aphthona Texana* Cr. W.
 5928. *Crepidodera Helvines* Linn. G.
 5941. *Chaetocnema subviridis* Lec. G.
 5942. *Chaetocnema denticulata* Ill. G.
 5969. *Microrhopala cyanea* Say. W.
 5977. *Chelimorpha Lewisii* Cr. W.
 5980b. *Cussida ellipsis* Lec.

TENEBRIONIDÆ.

6002. *Trimytis pruinosa* Lec. W.
 6010. *Epitragus canaliculatus* Say. W.
 6068. *Asida opaca* Say.
 6070. *Asida polita* Say. W.
 6071. *Asida sordida* Lec. W.
 6092. *Asida convexa* Lec. W.
 6097. *Asida elata* Lec. W.
 6098. *Ologlyptus anastomosis* Say.
 6105. *Eusattus reticulatus* Say. G.
 6128. *Eleodes acuta* Say.
 6129. *Eleodes suturalis* Say.
 6129a. *Eleodes Texana* Lec.
 6131. *Eleodes tricostrata* Say.
 6133. *Eleodes obsoleta* Say.
 6137. *Eleodes extricata* Say.
 6141. *Eleodes longicollis* Say.
 6150. *Eleodes hispidibris* Say.
 6167. *Eleodes opaca* Say.
 6174. *Embaphion muricatum* Say. W.
 6175. *Embaphion contusum* Lec. G.
 6222. *Tenebrio obscurus* Fab. G.
 6244. *Blapstinus pratensis* Lec.
 6245. *Blapstinus vestitus* Lec. W.

ALLECULIDÆ.

6375. *Hymenorus obscurus* Say. W.

ANTHICIDÆ.

6458. *Notorus subtilis* Lec.
 —. *Notorus* sp. W.

MORDELLIDÆ.

6583. *Anaspis rufa* Say. G.
 6593. *Mordella melena* Germ.
 6594. *Mordella scutellaris* Fabr. G.
 6602. *Mordella oculata* Say. G.
 6648. *Mordellistena unicolor* Lec.
 6662. *Mordellistena suturella* Helmuth. G.

MELOIDÆ.

6711. *Tricrania Stansburii* Hald. G.
 6713. *Macrobasis albida* Say. W.
 6721. *Macrobasis fulvescens* Lec. W.
 6722. *Macrobasis segmentata* Say.
 —. *Epicauta trichrus* var. G.
 6731. *Epicauta ferruginea* Say.
 6732. *Epicauta sericans* Lec. W.
 6738. *Epicauta maculata* Say.
 6746. *Epicauta corvina* Lec. W.
 6747. *Epicauta Pennsylvanica* DeG. W.
 6750. *Pyrota mylabrina* Chev. W.
 6779. *Cantharis reticulata* Say. W.
 6803. *Zonitis atripennis* Say. W.
 6807. *Nemognatha sparsa* Lec. W.
 6808. *Nemognatha bicolor* Lec. W.
 6809. *Nemognatha lurida* Lec.
 6810. *Nemognatha apicalis* Lec.
 6816. *Nemognatha piezata* Fabr. W.
 6825. *Nemognatha immaculata* Say. W.
 6830. *Gnathium minimum* Say.

RHYNCHITIDÆ.

Rhynchites hirtus Oliv.

BYRSOPIDÆ.

Thecesternus humeralis Say, race *rudis* Lec.

OTIORHYNCHIDÆ.

Epicærus imbricatus Say.
Ophryastes vittatus Say. W.
Ophryastes tuberosus Lec.
Ophryastes sulcirostris Say. W.
Phæcepholis elegans Horn.

CURCULIONIDÆ.

Sitones tibialis Germ.
Phytonomus eximius Lec. G.
Listronotus sp. G.
Cleonus tricittatus Say. G.
Cleonus frontalis Lec. W.
Lixus terminalis Lec. G.
Lixus mucidus Lec. G.
Dorytomus squamosus Lec. G.
Smicronyx fulvus Lec. W.
Endabus limatulus Lap. G.
Anthonomus fulvus Lec.
Anthonomus squamosus Lec.
Anthonomus sp. G.
Macrorhoptrus estriatus Lec.

Rhyssomatus lineaticollis Say.
Acalles turbidus Lec.
Tyloderma foveolatum Say. G.
Copturus operculatus Gyll.
Ceutorhynchus sp. G.
Ceutorhynchus decipiens Lec.
Rhinoncus pericarpus Gyll. G.
Rhinoncus pyrrhopus Boh. G.
Orthoris Crotchii Lec. G.
Trichobaris trinotata Say. G.
Baris transversa Say. W.
Baris macer (?). G.
Baris pruinosa Lec. G.

CALANDRIDÆ.

Sphenophorus voverinus Lec. var. *baridioides*.
Rhodobanus 13-punctatus Ill.
Cossonus certicola Say. W.

APIONIDÆ.

Apion sp. An undescribed species.

SUMMARY OF SPECIES OF COLEOPTERA.

Cicindelidæ	10	Lampyridæ	1
Carabidæ	35	Telephoridæ	3
Haliplidæ	1	Malachidæ	3
Dytiscidæ	9	Cleridæ	6
Gyrinidæ	2	Cerambycidæ	18
Hydrophilidæ	10	Spermophagidæ	4
Staphylinidæ	4	Chrysomelidæ	46
Silphidæ	7	Tenebrionidæ	23
Dermostidæ	4	Alleculidæ	1
Triphidæ	1	Anthicidæ	2
Erotylidæ	3	Mordellidæ	6
Nitidulidæ	2	Meloidæ	20
Phalacridæ	1	Rhynchitidæ	1
Coccinellidæ	9	Byrrhidæ	1
Heteroceridæ	1	Otiiorhynchidæ	5
Histeridæ	5	Curculionidæ	27
Scarabæidæ	30	Calandridæ	3
Buprestidæ	5	Apionidæ	1
Elateridæ	6		
Total		Families, 37: Species	316

LIST OF LEPIDOPTERA.

Collected in Colorado in June, July and August, 1876, by the Kansas University Scientific Expedition.

By Prof. F. H. Snow.

A list of the Coleoptera taken in Colorado by the expedition in my charge, was published in Vol. V of the Transactions of this Academy (pp. 15—20). The following Lepidoptera were collected by the same party. For the determination of species previously unknown to me, I am indebted to Wm. H. Edwards, Esq., of Coalburgh,